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2. Examinations of 161 spring chickens from farms near Manhattan, Kan., showed that 75.1 per cent of them were infested with tapeworms. The amount of infestation may vary from 1 to as many as 443 tapeworms; 10 to 27 are of more common occurrence, the average for infested fowls examined being 26.7 worms.

3. Tapeworms are transmitted from one chicken to another by means of an intermediate host in which the larval worm develops. The house fly (*Musca domestica* Lin.) is now known to transmit from one fowl to another three different species of tapeworms, viz., *Choanotœnia infundibuliformis, Davainea cesticillus,* and *Davainea tetragona.*

Studies on the Occurrence and Development of Ascaridia Perspicillum Parasitic in Chickens.[1]

Bertha L. Danheim.

Among the internal parasites of fowls is *Ascaridia perspicillum,* a round worm one and one-half to four inches in length. It inhabits the small intestine and may be present in small or rather large numbers. Infestations ranging from ten to twenty mature worms are usually serious enough to make a visible effect upon the fowl, while thirty or more of these worms may result in the death of the chicken, due probably to the absorption of toxin produced by the worms.

That many fowls are infested in nature with this parasite is shown by the records of examinations in the parasitological laboratory during the last five years. Of a total of 424 examinations, 181 fowls, or 42.4 per cent of them, had these worms in their entrails. The smallest infestation was one and the largest seventy-five of these nematodes, the average for all infested fowls being 10.6 worms.

While this common parasite has been known for years, no careful observations of its development, of its resistance to extremes of temperature and humidity or of its means of transmission from one fowl to another have been reported. Studies on this problem were begun at this station in December, 1918, at the suggestion of Dr. James E. Ackert, under whose direction they have been continued.

The facts determined to date may be summarized as follows:

1. In *Ascaridia perspicillum* the sexes are separate, the females being somewhat larger than the males.

2. These nematodes will live in normal saline solution at laboratory temperature for at least two weeks after their removal from the body of the fowl.

3. To remove the eggs from the adult female the worm is placed in a Syracuse watch glass containing a small amount of saline solution (8 parts NaCl to 1,000 parts distilled H_2O). The body is opened with dissecting needles and the uteri are removed. By opening one end of the gorged uterus the eggs can be readily pressed out into the saline solution with a dissecting needle. They may then be left in the watch glass or transferred to culture cells.

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[1] From the department of zoölogy, Agricultural Experiment Station of the Kansas State Agricultural College.

4. A single mature female contains approximately 1,500 eggs, which are just visible to the unaided eye.

5. The eggs are fertilized in the body of the female and covered with smooth, tough shells. Segmentation begins when the eggs pass from the body of the living nematode.

6. Fertilized eggs capable of development may be secured from nematodes kept in normal saline fourteen days after their removal from the chicken.

7. Eggs develop at laboratory temperatures in water, saline solution, or moist loam, but more satisfactory results are obtained when they are kept in saline solution in an incubator at 30° C.

8. Eggs are resistant to desiccation for at least seven days, as they resume development when saline is added.

9. Both fertilized and segmenting eggs (two-celled stage) are resistant to continuous freezing at 11° to 18° F. for 15 hours, but neither can endure 22 hours of such freezing.

10. Preliminary experiments indicate that unsegmented fertile eggs fail to develop in the digestive tracts of chickens, while eggs containing curved motile embryos hatch in the small intestine and are half grown in a month.

Kansas Rhynchophora in the Collection of the Kansas State Agricultural College.

WM. P. HAYES.*

The following list includes the species of Rhynchophora in the collection of the Kansas State Agricultural College. Many of the determinations were made by earlier workers in the College, among them being Popenoe, Dean, Marlatt, Norton and others. All determinations have been verified by the writer, who during the last four years has made a general study of the Rhynchophora available in this collection. Blatchley and Leng's arrangement of genera has been followed. This was deemed advisable, as the forthcoming check list of Coleoptera by Leng (the junior author) will probably follow somewhat closely this arrangement. The list includes 80 genera, represented by 169 species, among which are included 26 species, one variety and one color race not recorded in the lists of Kansas Coleoptera by Popenoe, Snow and Knaus. These are marked with an asterisk (*).

BRENTHIDÆ.

Eupsalis Lec.
    minuta Drury. Riley county.

ANTHRIBIDÆ.

Eurymycter Lec.
    fasciatus Oliv. "Kan."

Allandrus Lec.
    bifasciatus Lec. Topeka, July.

Anthribus Geoff.
    cornutus Say. Riley county, May, September, October.

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* Contribution No. 44, from the Entomological Laboratory, Kansas State Agricultural College.